

## CLAIM AMENDMENTS

claim 1, (cancelled)

claim 2, (cancelled)

claim 3, (cancelled)

claim 4, (cancelled)

claim 5, (cancelled)

claim 6, (cancelled)

claim 7, (cancelled)

claim 8, (cancelled)

claim 9, (cancelled)

1           10.   (currently amended) An apparatus for measuring a  
2 temperature in an electrical apparatus, comprising:

3           a first glass fiber impressed with a first Bragg grating  
4 having a specific first Bragg reflection wavelength  $\lambda_{BG1}$  and  
5 positioned at a location in an electrical apparatus at which a  
6 temperature is to be measured, whereby the Bragg reflection  
7 wavelength  $\lambda_{BG1}$  of said first Bragg grating is shifted as a function  
8 of change in said temperature at said location;

9           a source of broad-band light coupled to said first glass  
10 fiber for launching said broad-band light into said first glass  
11 fiber;

12           a second glass fiber impressed with a second Bragg  
13 grating having a specific second Bragg reflection wavelength  $\lambda_{BG2}$   
14 different from the specific Bragg reflection wavelength  $\lambda_{BG1}$  of the  
15 first Bragg grating;

16           an optocoupler for coupling said first glass fiber with  
17   said second glass fiber so that reflected light from the first  
18   Bragg grating is conducted to said second Bragg grating; and  
19           a photodetector coupled to said second glass fiber  
20   downstream of said second Bragg grating and receiving nonreflected  
21   light from said second Bragg grating, said photodetector having an  
22   output voltage dependent upon detected light intensity and  
23   representing a measurement of said temperature at said location,  
24           a plurality of said first Bragg gratings being written  
25   into said first glass fiber in spaced-apart relationship and  
26   positioned at a corresponding number of locations of said  
27   electrical apparatus at which temperatures are to be measured, said  
28   second Bragg grating having a variable second Bragg reflection  
29   wavelength  $\lambda_{BG2}$ , said photodetector comprising a photodiode and a  
30   transimpedance amplifier connected to said photodiode, said  
31   apparatus, further comprising means for mechanically deforming  
32   said second glass fiber in a micrometer range to vary said specific  
33   second Bragg reflection wavelength  $\lambda_{BG2}$  of said second glass fiber,  
34   said optocoupler having a branch to which a further glass fiber is  
35   coupled, said apparatus further comprising means for converting a  
36   light signal in said further glass fiber to a voltage, an output  
37   signal of said photodetector being normalized to the voltage into  
38   which the light signal in said further glass fiber is converted The  
39   ~~apparatus defined in claim 5 wherein said photodetector comprises~~  
40   ~~comprising~~ a photodiode and a transimpedance amplifier connected to  
41   said photodiode, said apparatus furth r comprising means for

42 mechanically deforming said second glass fiber in a micrometer  
43 range to vary said specific second Bragg reflection wavelength  $\lambda_{BG2}$   
44 of said second glass fiber, said optocoupler having a branch to  
45 which a further glass fiber is coupled, said apparatus further  
46 comprising means for converting a light signal in said further  
47 glass fiber to a voltage, an output signal of said photodetector  
48 being normalized to the voltage into which the light signal in said  
49 further glass fiber is converted.

Claim 11, (cancelled)

Claim 12, (cancelled)

1 13. (currently amended) An apparatus for measuring a  
2 temperature in an electrical apparatus, comprising:  
3 a first glass fiber impressed with a first Bragg grating  
4 having a specific first Bragg reflection wavelength  $\lambda_{BG1}$  and  
5 positioned at a location in an electrical apparatus at which a  
6 temperature is to be measured, whereby the Bragg reflection  
7 wavelength  $\lambda_{BG1}$  of said first Bragg grating is shifted as a function  
8 of change in said temperature at said location;  
9 a source of broad-band light coupled to said first glass  
10 fiber for launching said broad-band light into said first glass  
11 fiber;  
12 a second glass fiber impressed with a second Bragg  
13 grating having a specific second Bragg reflection wavelength  $\lambda_{BG2}$

14 different from the specific Bragg reflection wavelength  $\lambda_{BG1}$  of the  
15 first Bragg grating;  
16 an optocoupler for coupling said first glass fiber with  
17 said second glass fiber so that reflected light from the first  
18 Bragg grating is conducted to said second Bragg grating; and  
19 a photodetector coupled to said second glass fiber  
20 downstream of said second Bragg grating and receiving nonreflected  
21 light from said second Bragg grating, said photodetector having an  
22 output voltage dependent upon detected light intensity and  
23 representing a measurement of said temperature at said location,  
24 a plurality of said first Bragg gratings being written  
25 into said first glass fiber in spaced-apart relationship and  
26 positioned at a corresponding number of locations of said  
27 electrical apparatus at which temperatures are to be measured, said  
28 second Bragg grating having a variable second Bragg reflection  
29 wavelength  $\lambda_{BG2}$ , said photodetector comprising a photodiode and a  
30 transimpedance amplifier connected to said photodiode, said  
31 apparatus, further comprising means for mechanically deforming  
32 said second glass fiber in a micrometer range to vary said specific  
33 second Bragg reflection wavelength  $\lambda_{BG2}$  of said second glass fiber,  
34 said optocoupler having a branch to which a further glass fiber is  
35 coupled, said apparatus further comprising means for converting a  
36 light signal in said further glass fiber to a voltage, an output  
37 signal of said photodetector being normalized to the voltage into  
38 which the light signal in said further glass fiber is converted The  
39 ~~apparatus defined in claim 5,~~ said apparatus further comprising

40 means for mechanically deforming said second glass fiber in a  
41 micrometer range to vary said specific second Bragg reflection  
42 wavelength  $\lambda_{BG2}$  of said second glass fiber, wherein said optocoupler  
43 having a branch to which a further glass fiber is coupled, said  
44 apparatus further comprising means for converting a light signal in  
45 said further glass fiber to a voltage, an output signal of said  
46 photodetector being normalized to the voltage into which the light  
47 signal in said further glass fiber is converted.

Claim 14, cancelled.

1 15. (currently amended) An apparatus for measuring a  
2 temperature in an electrical apparatus, comprising:  
3 a first glass fiber impressed with a first Bragg grating  
4 having a specific first Bragg reflection wavelength  $\lambda_{BG1}$  and  
5 positioned at a location in an electrical apparatus at which a  
6 temperature is to be measured, whereby the Bragg reflection  
7 wavelength  $\lambda_{BG1}$  of said first Bragg grating is shifted as a function  
8 of change in said temperature at said location;  
9 a source of broad-band light coupled to said first glass  
10 fiber for launching said broad-band light into said first glass  
11 fiber;  
12 a second glass fiber impressed with a second Bragg  
13 grating having a specific second Bragg reflection wavelength  $\lambda_{BG2}$   
14 different from the specific Bragg reflection wavelength  $\lambda_{BG1}$  of the  
15 first Bragg grating;

16           an optocoupler for coupling said first glass fiber with  
17   said second glass fiber so that reflected light from the first  
18   Bragg grating is conducted to said second Bragg grating; and  
19           a photodetector coupled to said second glass fiber  
20   downstream of said second Bragg grating and receiving nonreflected  
21   light from said second Bragg grating, said photodetector having an  
22   output voltage dependent upon detected light intensity and  
23   representing a measurement of said temperature at said location,  
24           a plurality of said first Bragg gratings being written  
25   into said first glass fiber in spaced-apart relationship and  
26   positioned at a corresponding number of locations of said  
27   electrical apparatus at which temperatures are to be measured, said  
28   second Bragg grating having a variable second Bragg reflection  
29   wavelength  $\lambda_{BG2}$ , said photodetector comprising a photodiode and a  
30   transimpedance amplifier connected to said photodiode, said  
31   apparatus, further comprising means for mechanically deforming  
32   said second glass fiber in a micrometer range to vary said specific  
33   second Bragg reflection wavelength  $\lambda_{BG2}$  of said second glass fiber,  
34   said optocoupler having a branch to which a further glass fiber is  
35   coupled, said apparatus further comprising means for converting a  
36   light signal in said further glass fiber to a voltage, an output  
37   signal of said photodetector being normalized to the voltage into  
38   which the light signal in said further glass fiber is converted,  
39   ~~The apparatus defined in claim 5 wherein said optocoupler has~~  
40   having a branch to which a further glass fiber is coupled, said  
41   apparatus further comprising means for converting a light signal in

42 said further glass fiber to a voltage, an output signal of said  
43 photodetector being normalized to the voltage into which the light  
44 signal in said further glass fiber is converted.